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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,256	07/25/2006	Takamasa Koshizen	23085-08069	2473

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EXAMINER	
RUSH, ERIC	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/561,256	KOSHIZEN ET AL.	
	Examiner	Art Unit	
	Eric Rush	2624	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *19-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/18/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it exceeds 150 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 19 – 20, 22 – 31 and 33 – 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Bernd Heisele, Purdy Ho, Tomaso Poggio, "Face Recognition with Support Vector Machines: Global versus Component-based Approach", Proceedings 8th International Conference on Computer Vision, Volume 2, pp. 688 – 694, Vancouver 2001.

- With regards to claims 19 & 30, Heisele et al. teach a method and system for recognizing faces of persons, comprising: a training module configured to train a facial component recognition system to recognize a facial component; (Heisele et al., Section 4, Section 4.1) a population module configured to populate a first knowledge base with facial components and,

for each facial component, the facial component's body part classification; (Heisele et al., Figure 3, Section 4.2) a body part module configured to use the first knowledge base to determine, for each facial component in a plurality of facial components, a body part classification for the facial component, wherein the plurality of facial components comprises facial components extracted from facial identification training image data of a face of a first person at a first viewpoint and a face of a second person at a second viewpoint; (Heisele et al., Section 5 Paragraph 1 – Paragraph 2) an indicator component module configured to determine, from said plurality of facial components and their determined body part classifications, a first indicator component for the first person and a second indicator component for the second person, wherein the first indicator component comprises a first facial component that maximizes a posterior probability that the person class of the first facial component is the first person, (Heisele et al., Section 2, Section 2.1 and Section 2.2) and wherein the second indicator component comprises a second facial component that maximizes a posterior probability that the person class of the second facial component is the second person. (Heisele et al., Section 3.2 Equation 3)

- With regards to claims 20 & 31, Heisele et al. teach the method and system of claims 19 and 30, respectively, wherein a body part

classification of the first indicator component and a body part classification of the second indicator component are different. (Heisele et al., Section 1 Paragraph 4, Section 4.1, Figures 3 and 4)

- With regards to claims 22 & 33, Heisele et al. teach the method and system of claims 19 and 30, respectively, wherein the indicator component module is further configured to: determine a first conditional probability, that a class is the first person, of the facial components extracted from the facial identification training image data of the face of the first person at the first viewpoint; (Heisele et al., Section 4.2, Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1 – 2 and Paragraphs 5 - 7) determine a first posterior probability, that a class is the first person, by multiplying the conditional probability at the first viewpoint by a prior probability, that a class is the first person; (Heisele et al., Section 4.2, Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1 – 2 and Paragraphs 5 - 7) determine a second conditional probability, that a class is the first person, of facial components extracted from facial identification training image data of the face of the first person at an additional viewpoint; (Heisele et al., Section 4.2, Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1 – 2 and Paragraphs 5 - 7) and determine a second posterior probability, that a class is the first person, by multiplying the second conditional probability by the first posterior probability. (Heisele et al., Section 4.2,

Section 3.2 Paragraphs 2 - 4, and Section 5 Paragraphs 1 – 2 and Paragraphs 5 - 7)

- With regards to claims 23 & 34, Heisele et al. teach the method and system of claims 22 and 33, respectively, wherein the prior probability, that the class is the first person, comprises one Nth where N is a number of person classes. (Heisele et al., Section 4.2, and Section 3.2 Paragraphs 2 - 4)

- With regards to claims 24 & 35, Heisele et al. teach the method and system of claims 19 and 30, respectively, further comprising a storage module configured to store, in a second knowledge base, the first indicator component for the first person and the second indicator component for the second person. (Heisele et al., Abstract, Section 1 Paragraph 1, and Section 5 Paragraph 1, although Heisele et al. is silent to a storage module it is implicit from the discussion of using SVM recognition for every person in a database as well as the recording of the test set)

- With regards to claims 25 & 36, Heisele et al. teach the method and system of claims 24 and 35, respectively, further comprising a receiving module configured to receive body part classifications of facial components at various viewpoints of a person to be identified; (Heisele et

al., Section 5 Paragraph 1 – Paragraph 2) and an identification module configured to identify the person using an indicator component stored in the second knowledge base. (Heisele et al., Section 1 Paragraph 4, Section 4.1, Figures 3 and 4)

- With regards to claims 26 & 37, Heisele et al. teach the method and system of claims 19 and 30, respectively, wherein the first viewpoint and the second viewpoint are different. (Heisele et al., Section 5 Paragraph 1 – Paragraph 2 and Paragraphs 5 - 7)

- With regards to claims 27 & 38, Heisele et al. teach the method and system of claims 19 and 30, respectively, wherein the training module is further configured to: receive facial component training image data of faces of persons at various viewpoints; (Heisele et al., Section 5 Paragraphs 1 - 2) extract facial components at various viewpoints from the facial component training image data of faces of persons at various viewpoints; (Heisele et al., Section 4.1 – 4.2) and train a body part classifier module using the extracted facial components. (Heisele et al., Section 5 Paragraphs 1 - 2)

- With regards to claims 28 & 39, Heisele et al. teach the method and system of claims 27 and 38, respectively, wherein the body part classifier

module performs one-versus-all classification. (Heisele et al., Section 4.2 and Section 5 Paragraphs 1 - 2)

- With regards to claims 29 & 40, Heisele et al. teach the method and system of claims 19 and 30, respectively, wherein the body part module is further configured to: receive facial identification training image data of the face of the first person at the first viewpoint and the face of the second person at the second viewpoint; (Heisele et al., Section 5 Paragraphs 1 - 2) extract facial components from the facial identification training image data; (Heisele et al., Section 4.1 Figures 3 - 4) and determine body part classifications of the extracted facial components using the first knowledge base. (Heisele et al., Section 4.1 Figures 3 - 4)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 21 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernd Heisele, Purdy Ho, Tomaso Poggio, "Face Recognition with Support Vector Machines: Global versus Component-based Approach", Proceedings 8th International Conference on Computer Vision, Volume 2, pp. 688 – 694, Vancouver 2001 in view of Paul Viola, "Complex Feature Recognition: A Bayesian Approach for Learning to Recognize Objects," AI Memo No. 1591, Artificial Intelligence Laboratory, MIT, Cambridge, MA, November 1996..

- With regards to claims 21 & 32, Heisele et al. teach the method and system of claims 19 and 30, respectively. Heisele et al. fail to teach wherein the indicator component module is further configured to determine the first indicator component for the first person using Bayesian estimation. Viola teaches wherein the indicator component module is further configured to determine the first indicator component for the first person using Bayesian estimation. (Viola, Abstract, Figures 1 and 2, and Section 2 Paragraphs 1 – 5) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Heisele et al. to include the teachings of Viola. This modification would have been prompted in order to aid in the efficient processing and

recognition of complex images, such as faces. This approach is well known in the art and would be obvious to include in the training algorithm especially when various viewpoints are involved.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Lin U.S. Patent No. 6,108,437; which is directed to a face recognition apparatus and method.
- Zhang et al. U.S. Patent No. 6,671,391; which is directed towards a pose-adaptive face detection system and process.
- Kung et al. U.S. Patent No. 5,850,470; which is directed towards a neural network for locating and recognizing facial images.
- Yan et al. U.S. Patent No. 6,975,750; which is directed towards a system and method for training and recognizing face images.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Rush whose telephone number is (571) 270-3017. The examiner can normally be reached on 7:30AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ER

SAMIR AHMED
SUPERVISORY PATENT EXAMINER